Remarks

Response to Specification and Claim Objections

At the outset, the Examiner has objected to the specification and claims for not incorporating SEQ ID NO's. In response, the specification and claims have been amended to include sequence identifiers as required. Accordingly, this objection has been rendered moot.

Traversal of Restriction Requirement

In the Requirement for Restriction under 35 U.S.C. §121 and §372 set forth in the Official Action dated May 14, 2003, in the above-identified application, it is the Examiner's position that the inventions are not so linked as to form a single general inventive concept under PCT Rule 13.1, and that the inventions must be restricted to the following Groups:

Group I, claims 1-10, 18, 20-28, and 35-36, drawn to an isolated nucleic acid obtainable from the FRI locus of a plant, or a sequence obtainable from the FRI locus exhibiting the sequence of Figure 4, or variants of said sequence, a recombinant vector comprising an isolated nucleic acid obtainable from the FRI locus of a plant, a transformed host cell, a method for producing a transgenic plant, a transgenic plant, a method for influencing or affecting flowering time in a plant, or a method of delaying flowering.

Group II, claim 12, drawn to a process for producing a nucleic acid.

Group III, claims 11, 13-15, and 17 drawn to an isolated nucleic acid for use as a probe or primer and a method for identifying or cloning a nucleic acid obtainable from the FRI locus of a plant comprising hybridization reactions.

Group IV, claims 11, 13-14, and 16-17, drawn to an isolated nucleic acid for use as a probe or primer and a method for identifying or cloning a nucleic acid obtainable from the FRI locus of a plant comprising PCR reactions.

Group V, claims 29-31, and 34, drawn to an isolated polypeptide.

Group VI, claim 32, drawn to a method of making a polypeptide.

Group VII, claim 33, drawn to an antibody.

Group VIII, claims 35 and 37-38, drawn to a method for accelerating flowering time in a plant.

Group IX, claims 19, 35, and 39, drawn to a method for influencing flowering time and modulating VRN2 or FLC expression comprising expressing a nucleic acid obtainable from the FRI locus of a plant and a second nucleic acid and a vector used in the method.

Group X, claim 40, drawn to a promoter sequence obtainable from the FRI locus of a plant.

In addition, the Examiner notes that claims 11, 13-14, and 17 are generic to Groups III and IV, and that claim 35 is generic to Groups I, VIII, and IX, and accordingly those claims will be examined to the extent that they read on the elected invention.

Regarding the reasoning for restriction, it is the Examiner's position that the claims are not linked by a special technical feature because allegedly Group I is taught by Simon et al. (1996, Nature 284(6604) 59-62) which according

to the Examiner teaches a DNA sequence that when overexpressed in plants alters the flowering time of the transformed plant.

The Examiner additionally notes that nucleic acids which encode different proteins are allegedly structurally distinct, unrelated compounds.

Election with Traverse

In order to be fully responsive to the above-mentioned requirement, Applicant's hereby elect, with traverse, Group I, Claims 1-10, 18, 20-28, and 35-36, drawn to an isolated nucleic acid obtainable from the FRI locus of a plant, or a sequence obtainable from the FRI locus exhibiting the sequence of Figure 4, or variants of said sequence, a recombinant vector comprising an isolated nucleic acid obtainable from the FRI locus of a plant, a transformed host cell, a method for producing a transgenic plant, a transgenic plant, a method for influencing or affecting flowering time in a plant, or a method of delaying flowering.

Traversal

Applicants respectfully traverse this restriction requirement for the following reasons. First, it is improper to make a lack of unity holding in a §371 application, when the international application was found to have unity. Second, contrary to the Examiner's assertion, the invention does have a special technical feature. Finally, although the nucleic acids may have small structural differences, they still share a novel special technical feature, and have the same inventive concept.

First, applicants respectfully submit that the restriction requirement set forth above is improper for failure to comply with the relevant provisions of the Manual of Patent Examining Procedure (M.P.E.P.) pertaining to unity of invention determinations. The present application was filed under 35 U.S.C. §371 as a U.S. national stage

application under the Patent Cooperation Treaty.

As stated in § 1893.03(d) of the M.P.E.P.:

> Examiners are reminded that unity of invention (not restriction) practice is applicable in international applications (both Chapter I and II) and in national stage applications submitted under 35 U.S.C. § 371...
>
> The principles of unity of invention are used to determine the types of claimed subject matter and the combinations of claims to different categories of invention that are permitted to be included in a single international or national stage patent application. The basic principle is that an application should relate to only one invention or, if there is more than one invention, that applicant would have a right to include in a single application only those inventions which are so linked as to form a single general inventive concept.
>
> A group of inventions is considered linked to form a single general inventive concept where there is a technical relationship among the inventions that involves at least one common or corresponding special technical feature. The expression special technical features is defined as meaning those technical features that define the contribution which each claimed invention, considered as a whole, makes over the prior art.... Note also examples 1-17 of Annex B Part 2 of the PCT Administrative Instructions as amended 01 July 1992 contained in Appendix AI of the M.P.E.P.

In view of these rules, it is noteworthy that during the international stage of this application, in the International Search Report issued July 27, 2000, the Examiner did not make a lack of unity finding, and considered all of the claims to be directed to a single invention. It is therefore unclear how the US Examiner could conclude that instant application has ten Groups of inventions, when the international application from which it originates has unity of invention.

Plainly, the restriction requirement of May 14, 2003 fails to comply with the established United States Patent and Trademark Office practice of following the international rules regarding unity of invention in the prosecution of

applications filed under § 371.

Second, the instant invention does have a special technical feature in view of Simon et al. All of the present claims and groups of claims are based on the use of the Arabidopsis Thaliana "Frigida" gene (or closely related variants thereof) which are capable of conferring late flowering. Figure 4 shows a genomic sequence. Figure 4 also shows the corresponding cDNA sequence. The Examiner states that the restriction requirement is justified since there is no special technical feature, representing an advance over the art, which links the claims (action page 4, section 8.). The alleged rationale for this appears to be that Simon et al. discusses a gene capable of altering flowering time.

However, with respect, this argument is completely unfounded because the unifying feature of the claims is not, and was never presented as, merely the ability to alter flowering time. Rather it is the novel and inventive means by which this can be achieved i.e., via use of the fully characterized "Frigida" gene or closely related sequences thereto.

Simon et al. describes a gene ("Constans") which is capable of conferring late flowering, but does not teach or suggest the "Frigida" gene which is the unifying special technical feature of the instant claims. Claim 1 is drawn to an isolated nucleic acid obtainable from an FRI (Frigida) locus. Further, all of the claims explicitly require the Frigida gene.

Thus it is clear that the special technical feature which links these claims - an isolated Frigida (FRI) nucleic acid - defines a contribution over the prior art, and this feature is embodied as an essential feature of all of the Groups defined by the examiner. The restriction requirement is therefore improper under R13.1 & R13.2 PCT - a finding which is consistent with the position taken by ISR, who were applying the same criteria.

Finally, Applicants respectfully disagree with the Examiner's assertion that different nucleic acids necessarily encompass different inventive concepts. As asserted by the Examiner at section 9 of the action, of course all different nucleic acids are (by definition) structurally distinct. However, contrary to the Examiner's position, this does not preclude structurally similar nucleic acids from sharing an inventive concept. Nucleic acids which are similar, but not identical can be drawn to the same invention (in this case, the "Frigida" gene and corresponding late flowering associated therewith.)

Thus all groups in which the claims recite the FRI sequence, or sequence related thereto, should be rejoined (see Annex B in the PCT administrative instructions, attached hereto as Appendix A.)

In particular:

Group II concerns the production of modified FRI variants, which of course has as its starting point a novel and inventive FRI sequence, which sequence is a technical feature of the claim. It is set out in the PCT applicants's guide (also Annex B in the PCT administrative instructions, or in MPEP at 1850) that processes for manufacture of a product are construed as sharing the inventive concept with that product. Hence this group should also be rejoined with the products defined in Group I.

Groups III and IV concern FRI probes and primers, which have as their origin a novel and inventive FRI sequence, which sequence is a technical feature of the claims. These probes and primers are all portions of the nucleic acid of Group I, and thus examination of the nucleic acid of Group I would inherently encompass the probes and primers of Groups III and IV.

Group V and VI concern FRI polypeptides encoded by a novel and inventive FRI sequence, which sequence is a technical feature of the claim. In particular the special

technical feature which they share is the sequence of amino acids in the peptide which is an essential structural element of the peptide which is encoded by an exactly corresponding sequence of codons in the nucleic acids. Thus the two groups are properly technically related within the meaning of R13.2 PCT (see Example 17, Annex B, PCT administrative instructions- attached as Appendix A.) In this example, it is explicitly set forth that a novel DNA sequence has unity with the protein which it encodes.

Groups VIII & IX concern methods of use. It is set out in the PCT applicants's guide (also Annex B in the PCT administrative instructions, or the MPEP at 1850) that uses of a product are construed as sharing the inventive concept with that product. Hence these groups should also be rejoined with the products defined in Group I (and other Groups discussed above). In any case these groups also recite the special technical features which link the claims i.e. are based on isolated FRI nucleic acid.

Further, particularly with regard to Groups I, III, and IV, the MPEP sets out specific rules for examination of nucleotide sequences for international and 371 applications. See MPEP 1850:

> UNITY OF INVENTION - NUCLEOTIDE SEQUENCES
>
> Under 37 CFR 1.475 and 1.499 et seq., when claims do not comply with the requirement of unity of invention, i.e., when the claimed subject matter does not involve "one or more of the same or corresponding special technical features," 37 CFR 1.475(a), an additional fee is required to maintain the claims in the same application. 37 CFR 1.476 (b).
>
> The Commissioner has decided sua sponte to partially waive 37 CFR 1.475 and 1.499 et seq. to permit applicants to claim up to ten (10) nucleotide sequences that do not have the same or corresponding special technical feature without the payment of an additional fee. The PCT permits inventions that lack unity of invention to be maintained in the same international application for payment of additional fees. Thus, in international applications, for each group for which applicant has paid additional

> international search and/or preliminary examination fees, the USPTO has determined that up to four (4) such additional sequences per group is a reasonable number for examination. Further, claims directed to the selected sequences will be examined with claims drawn to any sequence combinations which have a common technical feature with the selected sequences. Nucleotide sequences encoding the same protein are considered to satisfy the unity of invention standard and will continue to be examined together.

Applicants again submit that there was unity of invention in the international stage of the instant application, and further, that all of the sequences in Groups I, III, and IV share a common, novel special technical feature. Further, as indicated above, multiple, related nucleotide sequences should be examined together. Therefor, all of the nucleotides in the instant application should be considered.

In conclusion, applicants submit that because the international application was found to have unity of invention, and because all of the claims share a novel special technical feature, all of the claims in the instant application should be considered together.

Applicants hereby reserve the right to file one or more continuing applications, as provided in 35 U.S.C. §120, on the subject matter of any claims finally held withdrawn from consideration in this application.

Early and favorable action on the merits of this application is respectfully solicited.

Respectfully submitted,

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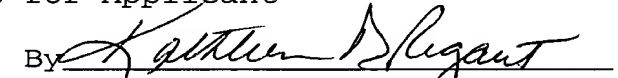
Attorneys for Applicant

By 
Kathleen D. Rigaut, Ph.D.
Reg. No. 43,047

Enclosures: Appendix A

Appendix A - 30 August 2001 PCT Gazette - S ction IV 49

Annex B of the PCT Applicant's Guide

Part 1

Instructions Concerning Unity of Invention

....(c) Independent and Dependent Claims. Unity of invention has to be considered in the first place only in relation to the independent claims in an international application and not the dependent claims. By "dependent" claim is meant a claim which contains all the features of another claim and is in the same category of claim as that other claim (the expression "category of claim" referring to the classification of claims according to the subject matter of the invention claimed-for example, product, process, use or apparatus or means, etc.).

(I) If the independent claims avoid the prior art and satisfy the requirement of unity of invention, no problem of lack of unity arises in respect of any claims that depend on the independent claims. In particular, it does not matter if a dependent claim itself contains a further invention. Equally, no problem arises in the case of a genus/species situation where the genus claim avoids the prior art. Moreover, no problem arises in the case of a combination/subcombination situation where the subcombination claim avoids the prior art and the combination claim includes all the features of the subcombination.

....(e) Combinations of Different Categories of Claims. The method for determining unity of invention under Rule 13 shall be construed as permitting, in particular, the inclusion of any one of the following combinations of claims of different categories in the same international application:

(I) in addition to an independent claim for a given product, an independent claim for a process specially adapted for the manufacture of the said product, and an independent claim for a use of the said product, or

Part 2

Examples concerning Unity of Invention

...Example 17

Claim 1: Protein X.

Claim 2: DNA sequence encoding protein X.

Expression of the DNA sequence in a host results in the production of a protein which is determined by the DNA sequence. The protein and the DNA sequence exhibit corresponding special technical features.

Unity between claims 1 and 2 is accepted.